

Wilbur D. May Arboretum & Botanical Garden

WILBUR'S EXPLORER GUIDE



ACTIVITIES FOR THIRD GRADE

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A Note from a Horticulturist

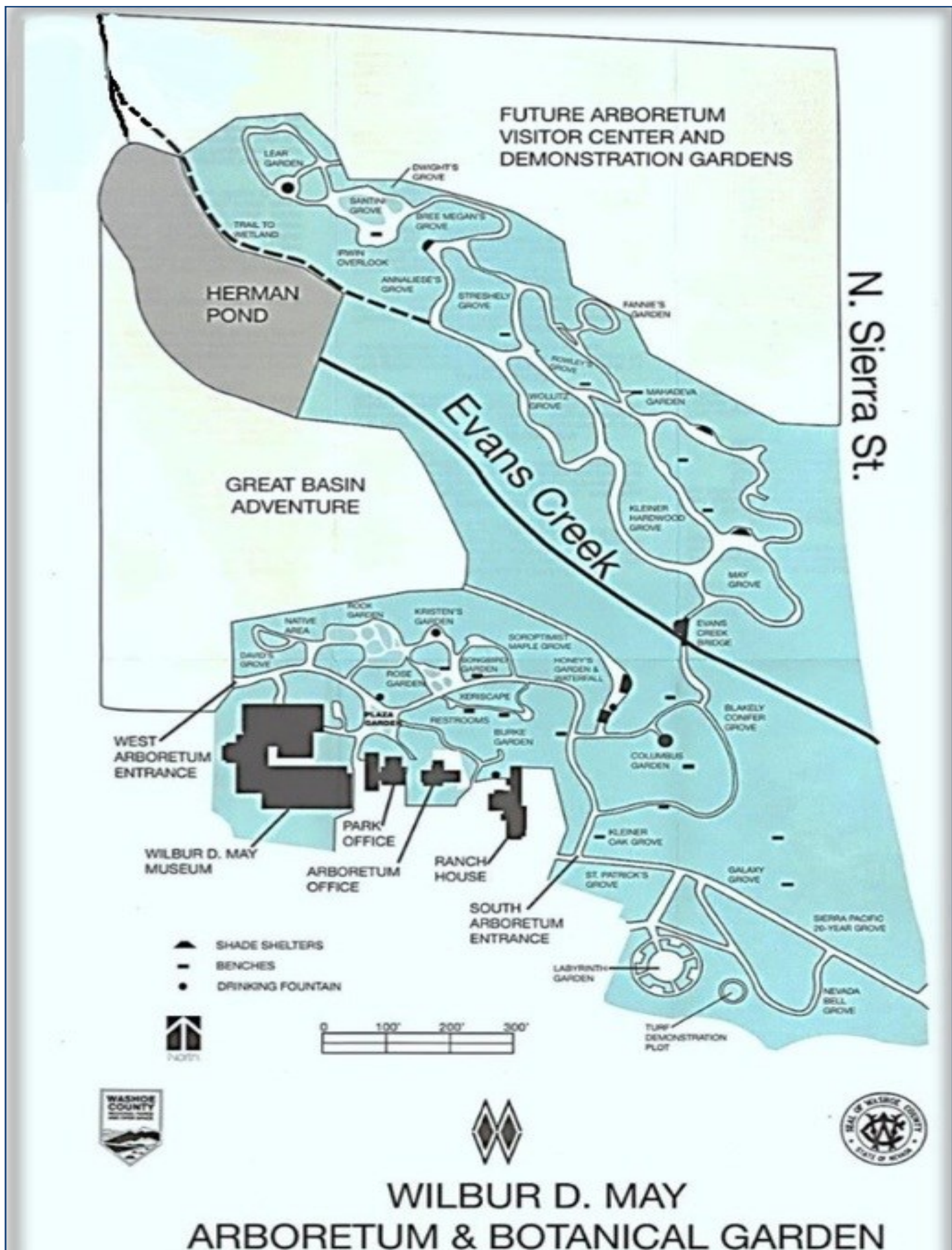
“The May Arboretum like many public gardens are an expression of the local cultural heritage and social norm. The May Arboretum is multifaceted and serves our community of all ages throughout the season. It is an outdoor environment to teach children and adults about our natural world. It is also a place for solace, reflection and peace. It provides the beleaguered urbanite an environment to surrender their busy schedule under an oak or willow tree in the wetlands or any garden or grove. Walking through the gardens rejuvenates the soul and offers a time and place to have a transcendent moment, unlike a busy parks or trails. The May Arboretum provides all of this and many more intangibles, and what is so unique about it, it is easily accessible.”

Working here at the Arboretum is a gift and an honor because not every town has one. It is a pleasure working here because the gardens and groves were built with donated funds and by passionate people. I enjoy coming to work to experience and feel the dynamics of the seasons. I appreciate the diversity of my horticulture vocation; from the scientific aspect of keeping accurate botanical plants records and maps, learning about new plant varieties and botanical knowledge, managing a greenhouse, writing horticulture articles, planting and designing new gardens, educating and teaching the public, meeting with donors and most of all provide direction to this distinctive facility. I enjoy working with volunteers and the flexibility to escape into gardens for a walk or work with staff. It is the most rewarding job I have had in my 33 year horticulture career. But what is most gratifying are the frequent public comments I receive, e.g., “this is such a beautiful place, what a treasure and jewel it is”.

-Bill Carlos, Horticulturist

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2017



Who was Wilbur D. May?

Wilbur D. May was an explorer! He loved to travel to new places and learn about the plants, animals, and people. Wilbur visited far off regions like Africa, South America, and Asia. He often met with the local people and traded for artifacts.



Wilbur made over 40 trips around the world! He learned how to fly, became an artist, and even wrote a song about pizza! In 1936, Wilbur moved to Reno, Nevada where he bred horses and cattle. Wilbur loved education and sharing with the community. Toward the end of his life, his family worked to create a museum to display Wilbur's findings. They began working with Ed Kleiner to create an Arboretum & Botanical Garden too. In 1986 the Wilbur D. May Arboretum & Botanical Garden opened to the public.



What is an Arboretum?

Like many people you may be wondering, what is an Arboretum? Similar to a Botanical Garden, an Arboretum is a collection of plants.

However, Arboretums are different because the collection is trees.



Think of an Arboretum as a tree zoo!



Arboretums are created for scientific research, education, and a place to explore.

Who takes Care of the Wilbur D. May Arboretum?

The Wilbur D. May Arboretum is cared for by dedicated volunteers, maintenance workers, and horticulturists. A horticulturist is someone who takes care of plants and makes sure they grow. This team works very hard together to make sure the trees and plants are doing their best!

Time to put on your backpack!

Now that you know about Wilbur D. May and what an Arboretum is, grab your backpack and explore! The rest of this guide includes activities for grades kindergarten through fifth. Find your grade, challenge yourself, and discover the adventure that is awaiting you at the Wilbur D. May Arboretum and Botanical Garden!



Suggestions for Families

There are lots of different options in the backpack for exploration.

- You can create your own Arboretum adventure by using the bird guide, tree guide, magnifying glass, and tape measure while exploring the gardens.
- Use the tape measure to measure tree trunks, and compare to your height!
- Follow the activities in this guide that are appropriate for your child's age.
- Reading the Introduction to each activity will give background information and set you and your explorer up for success!
- All the activities can be modified to be more difficult or less difficult.
- Take your time when walking through the Arboretum and keep low voices to increase your chances of seeing wildlife.
- If you have different aged children, suggest the older children help the younger ones with their activities.
- Ask open ended questions such as:

What do you see?

What do you feel?

What does it remind you of?

What do you wonder?

Suggestions for Teachers

Wilbur's Explorer Pack is an opportunity to immerse students in the outdoor classroom under your direction. Each pack has the supplies needed for an enriching field trip such as a bird guide, tree guide, measuring tape, magnifying glass, along with the curriculum in this guide. All of the following activities have been designed around Next Generation Science Standards . The standards corresponding to each activity can be found on page 19. However, you don't have to follow this guide.

When deciding on outdoor classroom activities, be inspired. Give guidelines, and follow the curiosity and wonder of students. Asking lots of open ended questions can encourage discussion and exploration. With diverse gardens, ecosystems, and accessibility, the Wilbur D. May Arboretum is a beacon for education of all ages.



THIRD GRADE

**-THINK LIKE A
BOTANIST**

**-THE UNTOLD STORIES
OF FLOWERS**

-THE CIRCLE OF LIFE

**-THE STORY OF
EVAN'S CREEK**



Think Like a Botanist

Suggested Gardens: Plaza garden behind the May Museum, David's Grove, Kristen's Garden

Vocabulary: Botanist, Diameter Shoulder Height.

Introduction: Many years ago, scientists like botanists had to use detailed hand-drawn pictures and educated observations to identify plants; they used only the information they could see to make judgments on tree and plant species. Scientists have only recently had access to technology such as DNA testing, microscopes, or high zoom cameras. These modern tools have allowed botanists to easily determine how environmental factors affect different plants. Today, students will get only a glimpse of what it was like to be a botanist before modern technology was available.

The incense cedar naturally grows in forests that get more than 15 inches of precipitation a year, but Reno only gets about 7 inches of precipitation a year. If the incense cedar trees in the Arboretum only get about half of the water of those in the wild, how do you think the trees will be different?

Background information on the incense cedar: The tree has a distinctive cinnamon colored bark, and if you rub its leaves between your fingers it produces a fragrant smell, hence the tree's name! The tree can live up to 500 years and, during those years it can reach a height of 80-100 feet and have a circumference of 150-190 inches. This particular species at the Arboretum is native to the west coast, from Northern Oregon down to central California, in areas that typically get 15-30 inches of precipitation a year.

Think Like a Botanist

Activity: Measuring Incense Cedar

1. Visit Plaza Garden, Kristen's Garden, or David's Grove.
2. Measure the circumference of an Incense Cedar tree, record your results on the following page.
3. Sketch a picture of Incense Cedar on the following page.

Thinking Questions:

How to measure the circumference: With the cloth measuring tape, measure the tree's trunk at your shoulder height.

How to estimate tree height: Think about how tall you are and how many times you would need to multiply your height to equal the tree's height.

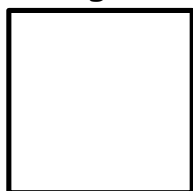
Notes for the sketches: Sketch the tree to help them identify the tree later. Look at the tree's needles, cones, trunk, and coloring.

1. A 30 year old incense cedar in the wild is, on average, 30-50 feet tall and has a circumference of 38-58 inches.
2. The incense cedar typically grows in forests that get more than 15 inches of precipitation a year, however, Reno only gets about 7 inches of precipitation a year. This information is key for understanding why the trees differ.

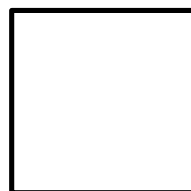
Think Like a Botanist: Incense Cedar

Measure the circumference of an incense cedar trunk and estimate how tall you think the tree is. Sketch a picture of an incense cedar that can help you identify the tree.

Height



Circumference



Sketch the tree below make sure to include the tree's needles, cones, bark and general shape.

The Untold Stories of Flowers

Suggested Gardens: Native Garden, Rock Garden, Labyrinth Garden

Vocabulary: Mutualistic relationship, generalist, specialist.

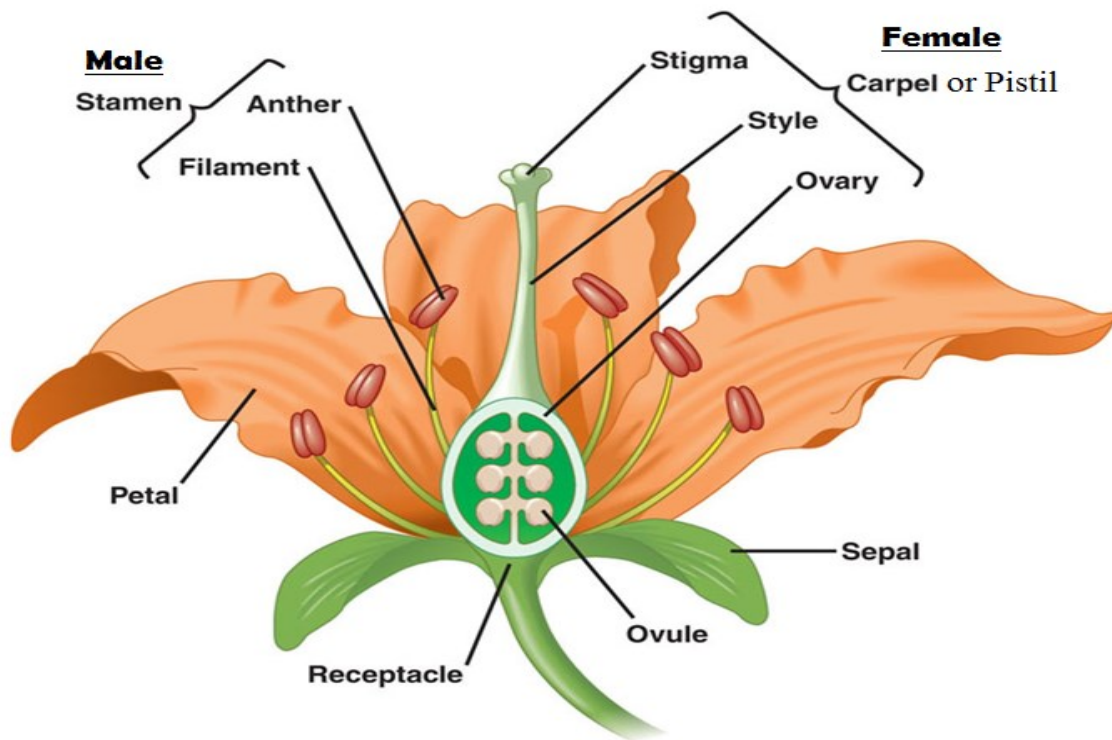
Introduction: Pollinators and flowers are made for each other. Some pollinators are generalists and pollinate many flowers, while some pollinators have a specific relationship with only one type of flower, this pollinator would be considered a specialist. In the desert, where life is extremely difficult, specialist relationships are common. The loss of pollinators or a plant species can have great impacts on the ecosystem. Pollination is essential for ecological survival and human survival (about 80% of crops are dependent on pollination). Knowing more about pollinators allows us to better understand what pollinators need to survive in a changing world. (Check out the pollinator fact sheet for info on pollinators. Our Labyrinth Garden is a bee/pollinator garden.)

Activity: Pollinator Lookout

1. Take a look at the "Pollinator Fact Sheet".
2. Explore the suggested gardens and look for pollinators.
3. Turn to the page "Pollinator Lookout", follow the directions.

The Untold Stories of Flowers: Pollinator Fact Sheet

About 80% of all plants in the world require a pollinator. A pollinator helps a plant by moving the male pollen grain from one flower to the female part of another flower. Pollinators and plants have a mutualistic relationship meaning they both benefit by working together. Pollinators get rewards like nectar and flowers get pollinated; it's a win-win.



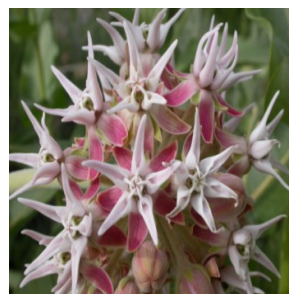
As you travel through the Arboretum, look for plants and their pollinators.

Use your magnifying glass to take a closer look at the flowers.

The Untold Stories of Flowers: Pollinator Lookout

Circle the pollinators you find in the Arboretum.

Match the flower to its best pollinator.



The Circle of Life

Suggested Gardens: David's Grove, Kleiner Grove, Honey's Garden.

Vocabulary: Metamorphosis, juvenile, sapling, reproduction, seedling.

Introduction: Life comes in a variety of different forms, but all life shares a birth, growth, reproduction, and death lifecycle. Typically, there are four main stages to an organism's life; however, life cycles can be completed in different ways. For example, mammals give birth to live young with the young born looking somewhat like their parents. Amphibians and insects, on the other hand, lay eggs with their young going through a metamorphosis turning into a form like their parents. Explore the Arboretum to discover similarities and differences between life cycles.

Activity: Life Cycles

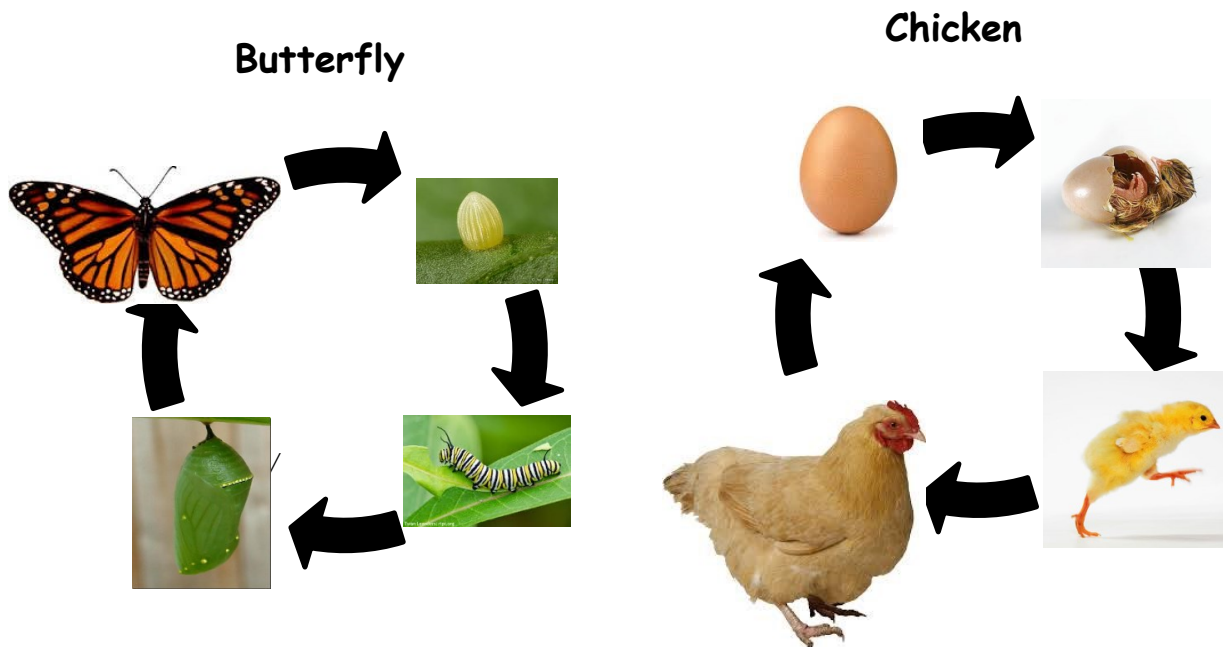
1. Visit Honey's Garden and turn to the pages titled "Life Cycles".
2. Follow the directions on the "Life Cycles" worksheets.

Thinking Questions

1. How many stages of life do chickens/butterflies have?
2. What is similar, what is different?
3. Do you think the eggs are the same?
4. Do all living things have a life cycle?
5. How do plants continue their life cycle?
6. How do animals continue their life cycle?

The Circle of Life: Life Cycles

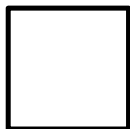
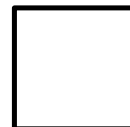
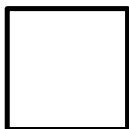
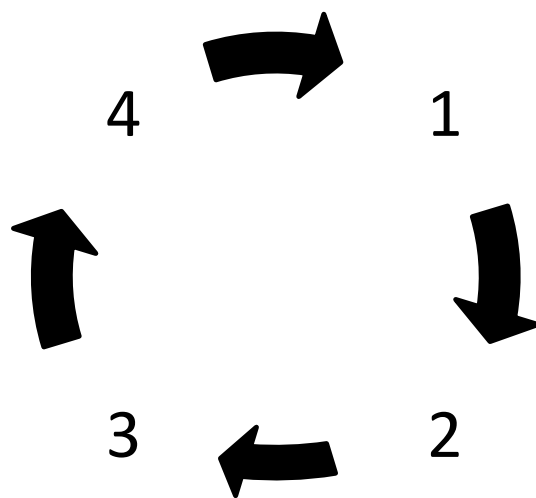
Life comes in a variety of different forms, but all have in common birth, growth, reproduction, and death.



How are the butterfly and chicken similar?
How are they different?

The Circle of Life: Life Cycles

Create a life cycle for a tree in the Arboretum given the patterns you discovered. Label the pictures 1-4 to make the lifecycle.



Next Generation Science Standards

Third Grade

3-LS3-2	Use evidence to support the explanation that traits can be influenced by the environment.
3-LS4-3	Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
3-LS1-1	Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

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